
Class 11 Mathematics – Chapter: Statistics

1. Introduction

- Statistics involves collecting, organizing, summarizing, and interpreting data.
- Helps in making decisions based on data analysis.

2. Types of Data

- Primary data: Collected directly by observation or survey.
- Secondary data: Collected from existing sources.

3. Presentation of Data

- Grouping data: Organizing data into classes or intervals.
- Frequency distribution: Table showing data frequencies.
- Graphical representation:

- Histogram
- Frequency polygon
- Bar graph
- Pie chart

4. Measures of Central Tendency

- **Mean (Arithmetic Mean):** Average value of data.
$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$
- **Median:** Middle value when data is arranged in order.
- **Mode:** Most frequently occurring value in the data.

5. Measures of Dispersion

- **Range:** Difference between maximum and minimum values.
- **Mean Deviation:** Average of absolute deviations from mean or median.

- **Variance and Standard Deviation:** Measures of spread around the mean.

6. Grouped Data Formulas

- Mean for grouped data:
$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$
- Median formula for grouped data involves class intervals.
- Mode estimated using formula with class intervals.

7. Cumulative Frequency

- Sum of frequencies up to a certain class.
- Used in finding median and quartiles.

8. Applications

- Economics, social sciences, business, and research.
- Used to summarize large data sets and make informed decisions.

9. Exam Tips

- Practice frequency table construction.
- Memorize formulas for mean, median, and mode.
- Understand graphical data presentation.
- Solve problems on grouped data carefully.